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NOTES ON FUNARIA

E. J. HILL

In Grout's "Mosses with Hand-lens and Microscope" it is stated that *Funaria americana* Lindb. had been collected in but five or six localities as far as recorded at the time of publication of that work. The states in which it occurred are given as Pennsylvania, Ohio, Georgia, and Minnesota. To thees Illinois can now be added. In April, 1903, I found it growing in the thin soil that caps a low cliff of limestone opposite the village of Lemont. The next month it was found again on the soil which lodges in crevices and on narrow shelves of the face of the cliff. In the summer of 1904 I came across it once more under similar conditions of growth on a cliff about a mile northwest of the village of Lockport. These stations are all on the west side of the Des Plaines River, the one at Lockport six miles below those at Lemont. The cliffs are remnants of the old banks of the river when the water of the upper lakes flowed southward to the Mississippi through the Chicago Outlet, and lie at some distance from its present channel. No similar outcrops of cliff-like structure are found between the two localities.

The moss is a small one, hardly looking like a Funaria. The stems are 2–5 mm. high, but the greatest unlikeness in size, as compared with the common Cord-moss, is in the length of the seta, which in fruiting examples in my collections is from 2 to 12 mm. high. Is is gregarious; or the stems may be more crowded, forming more or less caespitose tufts, sometimes mixed with other mosses. The habitat is well exposed to the sun's rays, becoming very dry in summer, making the moss a pronounced xerophyte. The hepatic, *Reboulia hemispherica*, is associated with it or grows under the same conditions, taking on a very xerophytic form, its parts much curled or becoming almost tubulose from the upward curling of their margins. Like *Grimaldia fragrans* (Balb.) Corda, which grows on the cliff at Lemont, *Funaria americana* is not attached to the underlying rocks, but roots in the thin soil that finds a resting place upon them.

This species is one of the earliest fruiting mosses of spring, the sporophyte starting in March, probably as soon as the days become warm enough, and ripening its spores the last of April or in May in this latitude. Specimens taken at the Lockport station April 6, 1908, mostly retained the calyptras, but some capsules were quite well advanced. The year after finding it there it was examined for fruit April 29. The opercula were mostly in place, but some had fallen off and the moss had begun to shed its spores. In those first found at Lemont, April 16, 1903, the hoods were generally gone, but the capsules mostly

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nearly grown. On May 6 they had lost the opercula in many cases and were freely shedding their spores. This early fruiting during the moisture of spring is an advantage to a moss growing under conditions so xerophytic. Yet the empty capsules persist far into the summer, as is shown in examples of those first found at Lockport, August 2, 1904. The urn was quite well preserved but the long rugulose neck and smooth or smoothish upper part, as well as the leaves, served to identify it. On some capsules even a few teeth remained.

FUNARIA FLAVICANS MICHX.

Several years ago I had a station for this species at Pine, Lake County, Indiana, close to the south end of Lake Michigan. This has now been destroyed by the encroachments of railway tracks and industrial works, which have so greatly multiplied in this region. The moss was first detected June 3, 1898. It grew in moist sands bordering a shallow slough. Such sloughs are common in this part of the dune area. Some capsules were ripe and were shedding their spores, others still retained the opercula, one occasionally even the calyptra, but the mass of them was full grown. The time of ripening can, therefore, be placed in the latter part of May and the first half of June, or one or two weeks earlier than that of *F. hygrometrica* in this latitude. The stems, 2–6 mm. high, formed little tufts or were loosely caespitose. The seta was shorter than the average in the common Cord-moss, being 2–3 cm. high, and it was not mixed with that species. The nearly horizontal or slightly nodding capsule, the urn less furrowed and with a less oblique mouth, the low, barely apiculate lid, the larger smooth spores, 22–28u in diameter, served to distinguish it from *F. hygrometrica*, with which it is most likely to be confounded. The spores of the latter I find 14–18μ, finely granulose or warty. Those of *F. americana* are about the size of those of *F. flavicans*, but are finely papillose. Though the operculum of *F. flavicans* is smaller than that of *F. hygrometrica*, its narrower capsule when old and de-operculate often presents a relatively wider and more open mouth than that of the latter.

There is also a character of the peristome which, if as common as in these I studied, must serve as a good distinction. The inner peristome in all that were examined was found but partly developed, ¼–⅓ as high as the teeth, each part forming a blunt process opposite a tooth In the description in Sullivant's "Icones Muscorum," page 87, nothing is said of the extent of their development, "processibus dentibus oppositis luteis," being the characterization, color and position only being mentioned. In the illustrative plate, Table 53, Fig. 14, they appear to be shown about as I find them, being seen in the figure by the margins of the teeth at their base. This is quite in contrast with the corresponding parts of *F. hygrometrica*, in which they are well developed, long and pointed or lanceolate-subulate, and about ⅔ the height of the teeth.

Funaria flavicans is a species mainly of southern range, and the station at the head of Lake Michigan must be well towards its northern extension. This is somewhat further north than Bedford Park, New York City, mentioned by R. S. Williams in THE BRYOLOGIST (**4**: 9. 1901.) or Closter, N. J., where it is said to have been collected by Austin. The most northerly station for which I find a report is Buffalo, N. Y., where it was obtained by Judge George W. Clinton, and is given as "rare" in David F. Day's "Catalogue of the Plants of Buffalo and Vicinity," published at Buffalo in 1883. As I have not come upon it again anywhere in the Chicago region, it must be considered rare also for this locality.

CHICAGO, ILLINOIS.

TWO EXTENSIONS OF RANGE

A. LEROY ANDREWS

Since the appearance of the first two parts of Volume 15 of *North American Flora* (1913) the two following cases of extension of range have come to my notice:

1. *Sphagnum Dusenii* Jensen. A specimen was recently received from A. Brinkman collected in a "boggy meadow" at Tetachuk Lake in British Columbia, September 1, 1911. It represents a very considerable extension of range to the westward, though one that might have been expected. The species is a fairly well marked one, but of uncommon occurrence. Its tendencies are northern and it is one of the lesser number that appear to thrive rather better inland than along the coast. The finding of it by Nichols at Salisbury, Connecticut, in 1907[1] sets a remarkable southern record. In New York State the southern outpost seems to be Sand Lake not far from Albany, where it was collected at an early date by Peck.[2] This was in fact its first discovery in America, but its identity remained a puzzle to our older bryologists.[3] As its southern limits figure next northern Michigan, also Wisconsin as reported by Cheney,[4] while further stations to the westward may be looked for.

2. *Rhabdoweisia crispata* (Dickson) Kindberg. Mr. Williams gives as the southern limit of this species in the Alleghanies, Virginia. Professor Atkinson's collections of 1901 from North Carolina show it however from two localities in that state: Blowing Rock (No. 10983) and Grandfather Mountain (No. 11606). Such extension was of course probable and it will very likely be found still further south in the mountains. It is in fact apparently not the first time that the plant has been collected in North Carolina, as I note Evans and Nichols in their Bryophytes of Connecticut[5] give its range southward to North Carolina. Dr. Nichols informs me that this record was based upon the label of No. 56 of the second edition of Sullivant and Lesquereux' Musci bor. Amer., which reads: Hab. in Novae Angliae Montibus Albis (Oakes); etiam in summo cacumine Black montis Carolinae Sept.,[6] meaning then either that this number was made up partly of

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[1] Evans and Nichols, Bryophytes of Connecticut, 83. 1908.

[2] A duplicate from the State Museum at Albany bears the date, July, 1867.

[3] It was not clearly recognized as a separate species in Europe until 1890.

[4] Transactions of the Wisconsin Acad. of Sc., Arts and Lett., X, 68. 1895.

[5] P. 99. 1908.

[6] No. 43 of the first edition bore the same label.